

Page 1

. Work Order ID 100887

May-01-13	7:27:58 AM	
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646.3512 Item ID:

**Revision ID:** 

**Start Date:** 

Item Name: Strut

Required Date: 5/10/13

4/30/13

Start Qty: 3.00 Req'd Qty: 5.00

Accept

**Cust Item ID:** 

Tool ID

**Customer:** 

Reference:

Approvals:

Process Plan: MU5

Date: \3 OS - 03 Tooling:

Date: SPC (Y/N):

Set Up/

**Run Hours** 

Date:

Tool # Plan

Code

\*N900040100\*

Reject

Qty

Run

Stop

Setup Start

Insp.

Stop

Number Stamp

Reject

**Work Center ID Draw Nbr** 

Sequence ID/

Description **Revision Nbr** 

Operation

646.3500 N/C (ECN) U/R

110

\*110\*

FLOW CNC Waterjet

Waterjet

Memo

0.00

0.00

1-Cut 646.3500 plate 2.00"X 2.00" as per Dwg Dwg Rev: NC

Prog Rev: NIC

2-Deburr if necessary

120

QC2- Inspect parts off machine FAI/FAIB

0.00

\*120\*

Quality Control

QC

Memo

0.00

Accept

Qty

NCR: Ye	es / No				WORK ORDER NON-O	CONF	ORN	//ANCE / UPI	DATE			e e e
								·		QA Closed:	Date:	•
Work Orde	ŕ:	,			DISPOSITION				AGAINST DI	PARTMENT	/PROCESS	
Part No	o				Rework Scrap			Skid-tube Machining	Crosstube Small Fab	Pro	Water Jet d. Eng. Coor.	Engineering Quality
NCR N	0				Use-as-is Work Order Update	]   T		noforming Large Fab	Finishing Composite	Rec/Stor	re/Packaging Supplier	Other
Root				Descri	ption of work order update	Init	tial	Act	ion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief	f Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data								3, 3,				
equip/Tooling		ļ										
Operator							İ					
Material												
Setup		ŀ										
Other					•							
Process												
Supplier												
Fraining [						1						
Jnapproved				-								
					F	AULT (	CATE	GORY				
Landin	g Gear				General						·	
	Bending				Bend	G	rain			Ovalized		Pressure/Forced
	Centre No	ot Concei	ntric to (	o/s	BOM/Route	На	ardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	In:	specti	on Incomplete		Part Incorred	ct	Weld
	Crushed/	Crimped			Burrs	in	struct	ions Incomplete/L	Jnclear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs			Γ	Contamination	М	lainte	nance		Part Moved		
	Heat Trea	at			Countersink	М	lislabe	led	Г	Positioned V	Vrong	_
Ī	Inspectio	n Strip in	Tube		Cut Too Short	М	lisread	I		Power Loss/	Surge	Other
Ī	Ripples in	Bend			Drill Holes	По	ffset					
Ī	Torque W	Vaves in E	Extrusion	n	Drawing		ut of C	Calibration				
	Turning S	equence			Finish		ut of S	equence				
	Wave/Tw	vist in Tul	be		Folio	По	utside	Dimensions				

DQA:

Date: \_

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 100887 Page 2 May-01-13 7:27:58 AM \*N900040100\* Accept Item ID: 646.3512 Setup Start **Revision ID:** Item Name: Strut **Start Qty:** 5.00 4/30/13 **Start Date: Cust Item ID:** Req'd Qty: 5.00 Required Date: 5/10/13 **Customer:** Reference: Run Approvals: **Process Plan:** Date: Tooling: Date: Stop Date: **SPC (Y/N):** ... QC: Date: Tool # Plan Reject Tool ID Sequence ID/ Operation Set Up/ Accept Reject Insp. Qty **Work Center ID** Description **Run Hours** Code Oty Number Stamp 0.00 130 QC8- Inspect parts - second check \*130\* OC 0.00 Memo Quality Control 140 0.00 \*140\* Small Fab 0.00 Memo Small Fab 1- Fabricate tube as per dwg 150 QC5- Inspect part completeness to step on W/O 0.00

0.00

Memo

(B) 13.00-27

\*150\*

Quality Control

QC

NCR:	V	•	A1 -
NCK:	Yes	•	No

# **WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: July Date	<b>*</b> :	• •	, 7
	16.	8 (al 12	4
		111	

									QA Closed:	Date:	0/16/1
Work Order	i: 10	08	81		DISPOSITION	AGAINST DE	PARTMENT	/PROCESS	1   11		
	o. 6C		,		Rework Scrap <del>*</del> Use-as-is		Skid-tube Machining moforming	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor.	Engineering Quality Other
NCR N	o <u> </u>	3.7	H	9	Work Order Update	l lilei	Large Fab	Composite	i necystor	Supplier	
Root				Descri	ption of work order update	Initial	Act	tion	Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Chief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator			4	Duto	mistrial chang. I from Aprical	0AS 16 3-83	SCAMPT DOS	M		27.0	0AS 16
Material Setup Other	7/W			the mal	thid Gobi is no	2770-12 13/05/14	W.H 304 . 100" 4		13.05.14	13515	QS2042 13/05/14
Process Supplier Training Unapproved				Per Ap	is the	sol of the sol of that	W 11 30 50	63.43			Per Email
		· · · · · · · · · · · · · · · · · · ·			F	<b>AULT CAT</b>	GORY	X	X9 \		
Landin	g Gear				General				<u>·</u> ` )		_
	Bending Centre No	ot Conce	ntric to	o/s	Bend BOM/Route	Grain Hardw		# 101 =	Ovalized Over/Under	<del></del>	Pressure/Forced Temperature/Cure
	Cracks			L	Broken/Damaged	$\vdash$	tion Incomplete		Part incorred	<del> </del>	Weld
	Crushed/	Crimped		<u> </u>	Burrs		tions Incomplete/	Urlclear	Part Lost/Mi	ssing	Wrong Stock Pulled
.	Cuffs				Contamination	Maint	enance		Part Moved		
စု ်	Heat Trea				Countersink	Mislab	eled		Positioned V	Vrong	•
	Inspectio	•	Tube	L	Cut Too Short	Misrea	d	L	Power Loss/	Surge	Other
	Ripples in				Drill Holes	Offset					
	Torque W	laves in f	Extrusio	n L	Drawing	Out of	Calibration				
	Turning S	equence			Finish	Out of	Sequence			<del> </del>	
	Wave/Tw	ist in Tul	be		Folio	Outsid	e Dimensions				

May-01-13 7:27:58 AM

Item ID:

646.3512

Accept

\*N900040100\*

Setup Start

**Revision ID:** 

**Start Date:** 

Item Name: Strut

Required Date: 5/10/13

4/30/13

Start Qty: 5.00 Req'd Qty: 5.00

**Cust Item ID:** 

**Customer:** 

Reference:

**Approvals:** 

**Process Plan:** 

Date:

**Tooling:** 

SPC (Y/N):

Date:

Date:

Run

Stop

Sequence ID/

Work Center ID **Description** Weld per dwg A/R Aluminam rod Batch: 120 \$ 10.00

QC:

Operation

Date:

Set Up/ **Run Hours**  Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject Insp. Number Stamp

160

\*160\*

Large Fab Large Fab

Memo

0.00

Weld tube to plate as per dwg. Weld end were tube is punch.

170

\*170\*

QC Quality Control

Memo

QC9- Inspect visual per QSI004- Fusion Welds

QC5- Inspect part completeness to step on W/O

0.00

0.00

P-02-33

8 R 13-5-22

180

\*120\*

OC Quality Control Memo

0.00

0.00

13.05-23

											DQA:	Date:	:
NCR: Ye	es / No					WORK ORDER NON-C	COF	NFORM	/IANCE / UP	DATE			
											QA Closed:	Date	
Work Orde	ŕ:				١	DISPOSITION				AGAINST D	EPARTMENT	/PROCESS	
Part N		Rework Scrap							Skid-tube Crosstube Machining Small Fab			Water Jet d. Eng. Coor.	Engineering Quality
NCR N	o				Use-as-is Thermoforming Work Order Update Large Fab C			Finishing Composite	_	re/Packaging Supplier	Other		
Root	Root Description of work order update Initial Action												
Cause	Date	Step	Qty		0	r Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
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quip/Tooling			[ [										
perator													
/laterial		ļ.											
etup							l						
Other													
Process													
iupplier													
raining													
Jnapproved													
						F	AUL	T CATE	GORY				
Landin	g Gear			_		General				_		_	_
	Bending				-	Bend		Grain			Ovalized		Pressure/Forced
	Centre N	ot Concei	ntric to (	o/s		BOM/Route ,	$\perp$	Hardwa	re		Over/Under	tolerance	Temperature/Cure
Ĺ	Cracks					Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
	Crushed/	Crimped				Burrs		instruct	ions Incomplete/	'Unclear	Part Lost/Mi	issing	Wrong Stock Pulled
L	Cuffs			Ĺ		Contamination		Mainte	nance		Part Moved		
[	Heat Trea	at				Countersink		Mislabe	led		Positioned V	Vrong	
	Inspectio	n Strip in	Tube	[		Cut Too Short		Misread	l		Power Loss/	Surge	Other
	Ripples in	n Bend				Drill Holes		Offset					
[	Torque V	Vaves in E	xtrusion	ո [		Drawing		Out of 0	Calibration				
	Turning 9	Sequence		Ī		Finish		Out of S	equence				

Outside Dimensions

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 10 May-01-13 7:27:58 AM			*100	887*					Page 4	
Revision ID: Strut  Start Date: 4/30/13  Required Date: 5/10/13	Start Qty: 5.00 Req'd Qty: 5.00		Accept	*N900040  Cust Item ID: Customer:	100	)* S	etup Start	ı u.	S1* S2*	
	an:	Date:		Date:		R	un Star Stop		R1* R2*	
Sequence ID/ Work Center ID  190  *100* Outsource4  Outsource process - Anodize  200  *200* Packaging Packaging	Operation Description Outsource process-Anodic  Memo Issue P/O:Anodize as p  Receive & Inspect for Da  Nemo	er dwg mage & Mat'l Certs	Set Up/ Run Hours 0.00 0.00 0.00	Tool ID Tool #	Plan Code	Accept Qty	Reject	Reject Number	Insp. Stamp	
*210*/ QC Quality Control	Memo		0.00				<del></del>			

											DQA:	Date:	7
NCR: Y	es / No					WORK ORDER NON-C		NFORM	MANCE / UPI	DATE	QA Closed:	Date:	-
Work Orde	r:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part N NCR N	o					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	<b>⊣</b>	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Desc	rip	tion of work order update	ı	nitial	Act	tion	Sign &		
Cause	Date	Step	Qty		0	r Non-conformance	Ch	ief Eng	Desci	ription	Date	Verification	QC Inspector
oc/Data quip/Tooling Operator Material Setup Other Process Supplier Training										·			
						F	AUL	T CATE	GORY				
Landin	g Gear			-		General	_				7	_	- -
	Cracks	ot Conce		o/s		Bend BOM/Route Broken/Damaged		1	on Incomplete		Ovalized Over/Under Part Incorred	ct	Pressure/Forced Temperature/Cure Weld
	Crushed/ Cuffs Heat Tre					Burrs Contamination Countersink		Mainte Mislabe		Unclear	Part Lost/Mi Part Moved Positioned V	-	Wrong Stock Pulled
ł	Inspection		Tube	-	_	Cut Too Short	-	Misread		<u> </u>	Power Loss/		Other
· •	Ripples in		1400	-		Drill Holes	$\vdash$	Offset	•	L.	٦. ٥٠٠٠ د د د د د د د د د د د د د د د د د		10010
İ	Torque V		Extrusio	,	-	Drawing	$\vdash$	4	Calibration		-		
1		Samence		· }	$\neg$	Einich	$\vdash$	1	Sequence				· · · · · · · · · · · · · · · · · · ·

Outside Dimensions

Wave/Twist in Tube

<b>Work Orde</b> <i>May-01-13 7:27</i>		0887		*100	า887*							Page 5
Item ID: Revision ID: Item Name:	646.3512 Strut			Accept	*N900	<b>040</b>	100	*	Setup	Start Stop	*NS	S1* S2*
Start Date: Required Date: Reference:	4/30/13 5/10/13	Start Qty: 5.00 Req'd Qty: 5.00	*5* *5*		Cust Item II Customer:	D:						
Approvals:	Process Pla	in:	Date:	Tooling: SPC (Y/N):	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ate:			Run	Start Stop	*NI *NI	R1* R2*
Sequence ID/ Work Center II 220 *20 * SprayPaint Spray Painting	<b>D</b>	Operation Description  Memo Prime as per Batch: 125	dwg (see note 3)	Set Up/ Run Hours 0.00	Tool ID	Tool#	Plan Code	Accept Qty	Rej Qty		Reject Number	Insp. Stamp  Slamp  -05-23
230 *230* QC Quality Control		QC14- Inspect Spray Pai	nt	0.00	3 los/24			· · ·		<del></del>		
240 * <b>74</b> Packaging		Receive & Inspect for Da	amage & Mat'l Certs	0.00					· – ·	//	1	T 6

50538

\*\*\*IDENTIFY AS PER APICAL MPP-120 BY STAMPING THE P# AND REV\*\*\*

Packaging

										DQA.	Date	·
NCR: Y	es / No				WORK ORDER NON-C	CON	IFORM	MANCE / UP	DATE			•
										QA Closed:	Date	·:
Work Orde	eń:				DISPOSITION				AGAINST D	EPARTMENT	/PROCESS	
Part N					Rework Scrap	]	ſ	Skid-tube Machining	Crosstube Small Fab		Water Jet	Engineering Quality
NCR N	10				Use-as-is Work Order Update	]		noforming Large Fab	Finishing Composite	_ Kec/Stor	re/Packaging Supplier	Other
Root				Descri	iption of work order update	Ir	nitial	Ac	ction	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chi	ief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling		'		i		1						}
Operator		'		ı			1					
Material		'		ı							}	
Setup		'		ı								
Other		1	}	i		1	ļ					
Process				ĺ							ļ	
Supplier		1		1								
Training				ı				ļ.				
Unapproved		<u> </u>		L		上						
					F/	AULT	T CATE	GORY				
Landir	ng Gear				General							_
	Bending				Bend	$\bigsqcup'$	Grain		L	Ovalized	L	Pressure/Forced
	Centre No	ot Concer	ntric to (	J/S	BOM/Route		Hardwa	ire	L	Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	ion Incomplete	L	Part Incorred	ct _	Weld
	Crushed/	Crimped		L	Burrs		Instruct	tions Incomplete/	'Unclear	Part Lost/Mi	issing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	enance		Part Moved		_
	Heat Trea	at			Countersink		Mislabe	eled		Positioned W	Vrong	
	Inspection	n Strip in	Tube		Cut Too Short		Misread	t		Power Loss/	Surge	Other
[	Ripples in	n Bend			Drill Holes	П	Offset			_		

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 100887 Page 6 May-01-13 7:27:58 AM 646.3512 Accept \*N900040100\* Item ID: Setup Start **Revision ID:** Item Name: Strut 4/30/13 Start Qty: 5.00 **Start Date: Cust Item ID:** Required Date: 5/10/13 **Req'd Qty:** 5.00 **Customer:** Reference: Run Tooling: **Process Plan:** Date: Date: **Approvals:** Stop SPC (Y/N): QC: Date: Date: Reject Reject Sequence ID/ Set Up/ Tool ID Tool # Plan Accept Insp. Operation Number Stamp **Work Center ID** Description Code Qty Qty **Run Hours** QC21- Final Inspection - Work Order Release 0.00 250 \*250\* 0.00 Memo

Quality Control

(M) 5. 51

											DQA:	Date:	
NCR: Y	es	/ No				<b>WORK ORDER NON-</b>	CO	NFORI	MANCE / UP	DATE			
											QA Closed:	Date:	•
Work Orde	r:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
	-					Rework	7		Skid-tube	Crosstube	1	Water Jet	Engineering
Part N	lo.					Scrap			Machining	Small Fab	]· Pro	d. Eng. Coor.	Quality
						Use-as-is		Therr	noforming	Finishing	Rec/Sto	re/Packaging	Other
NCR N	lo.				<del></del>	Work Order Update			Large Fab	Composite	]	Supplier	
Do ot	Ŧ				Dass	winking of words and an and about	<b>—</b>	lucial at	1 0-	A:	C: 0		1
Root Cause	ĺ	Date	Step	Qty	Desc	ription of work order update or Non-conformance		Initial nief Eng	i	tion ription	Sign & Date	Verification	QC Inspector
Doc/Data	+	Date	Step	Qty		or non-comormance	+	ilei Liig	Desc	·	Date	Verification	QC IIISPECTOI
Equip/Tooling	$\dashv$												
Operator	$\dashv$												
Material	┨												
Setup									Į				
Other													
Process				ļ									:
Supplier	_						1						:
Training													
Unapproved		<del></del>	l	<u> </u>	<u> </u>							L	l
							FAU	LT CATE	GORY				
Landir	$\overline{}$				,	General		٦		_	٦		7 .
		Bending				Bend	<u> </u>	Grain		<u> </u>	Ovalized	.	Pressure/Forced
	_	Centre No	ot Concei	ntric to	O/S	BOM/Route	$\vdash$	Hardwa			Over/Under	<del></del>	Temperature/Cure
1		Cracks			1	Broken/Damaged	- 1	Inspect	ion Incomplete		Part Incorre	ct	Weld

Instructions Incomplete/Unclear

Maintenance

Out of Calibration

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

Part Moved

Wrong Stock Pulled

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Crushed/Crimped

Inspection Strip in Tube

Torque Waves in Extrusion

Cuffs

Heat Treat

Burrs

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

### **Picklist Print**

May-01-13 7:27:58 AM

Work Order ID:

100887

Parent Item:

646.3512

Parent Item Name:

Strut

**Start Date:** 4/30/13

Required Date: 5/10/13

Page 1

Start Qty: 5.00

Required Qty: 5.00

**Comments:** 

IPP REV:A 12.10.19 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6S.100 6061-T6 :\00 Sheet		Purchased	No				sf	147.6000		0.147368	5 M	13.05	. 14
				<b>Location</b>		Loc Qty	Lo	c Code					
,				MAT021		147.6							
				102	201	1							
				118	072	11.2							
<u> </u>				118	523	60							
				124	193	75.4							
<b>16061T6T0.500W.065</b> 5061T6 RD TUBE .500 X	.065W	Purchased	No	•	———		f	131.8500	Carl - Message	5.263158	}		
				Location		Loc Oty	<u>La</u>	oc Code					
				MAT014		131.85							
				112	083	131.85							

M M3048 .100"

Batch: 113802

M 304 RA Tube . 500 x . 049 w

Batch: M125573 412 = 7,2 | Q 135-22

NCR:	Yes	1	No

								*				, , , , ,
										DQA:	Date:	, .
NCR: Y	es / No				<b>WORK ORDER NON</b>	-COI	NFORM	MANCE / UPDATE				
	<b>,</b>								(	QA Closed:	Date:	
Nork Orda	r.				DISPOSITION			AGAINS	T DEP	ARTMENT,	/PROCESS	
Part N	Part No				Rework Skid-tube Crosstube Scrap Machining Small Fab P					Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other	
Root				Descri	ption of work order update		I Initial	Action		Sign &		
Cause	Date	Step	Qty		or Non-conformance		nief Eng	Description		Date	Verification	QC Inspector
Ooc/Data quip/Tooling												
Operator Material	$\dashv$											
etup								,				
Other						1						
rocess												
Supplier												
raining		ļ										
Inapproved		<u> </u>										
						FAUL	LT CATE	GORY				
Landin F	ng Gear			_	General		1					l_ <i>,</i> _ ,
}	Bending			0/5	Bend		Grain		$\vdash$	Ovalized	<del>}</del>	Pressure/Forced
<u> </u>	_	Not Conce	ntric to	<sup>0/5</sup>  -	BOM/Route	-	Hardwa		$\vdash$	Over/Under	<del></del>	Temperature/Cure Weld
}	Crucho	/Crimped	i	-	Broken/Damaged Burrs	-	4	ion Incomplete tions Incomplete/Unclear	$\vdash$	Part Incorred Part Lost/Mi	<b>}</b>	Wrong Stock Pulled
ŀ	Cuffs	Cimped	1	-	Contamination	$\vdash$	Mainte	·	$\vdash$	Part Lost/Mi	L	TVVI OIIS STOCK FUILED
}	Heat Treat			-	Countersink		Mislabe		$\vdash$	Positioned V	Vrong	
<u> </u>		on Strip ir	n Tube	<u> </u>	Cut Too Short	-	Misread		$\vdash$	Power Loss/		Other
t	Ripples	-			Drill Holes		Offset		ш		<u> </u>	
		Waves in	Extrusio	n	Drawing		-}	Calibration	-			·
		Sequence			Finish		4	Sequence	-			
		wist in Tu			Folio		7	Dimensions	-			

DART AEROSPACE LTD	Work Order:	100887
Description: Strut	Part Number:	646.3512
Inspection Dwg: 646.3500 Rev: NC		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.00	11-0.030	2.003	J		V	JKM-0)
2.00	H-0.B0	2.001	/		V	
0.100	1)-0.010	0.096	/		V	
	25.72 11. 12.11					
	,					
:					!	
			-			

Measured by:	m/in/	Audited by:	57	Preliminary Approval:	
Date:	13:05·K	Date:	135 14	Date:	

Rev	Date	Change	Revised by	Approved
E	10.04.14	Added preliminary approval	KJ	

\$ 10.04.15

DART AEROSPACE LTD	Work Order:	100887
Description: STRUT	Part Number:	646.3512
Inspection Dwg: 646.3500 Rev: N/C		Page 1 of 1

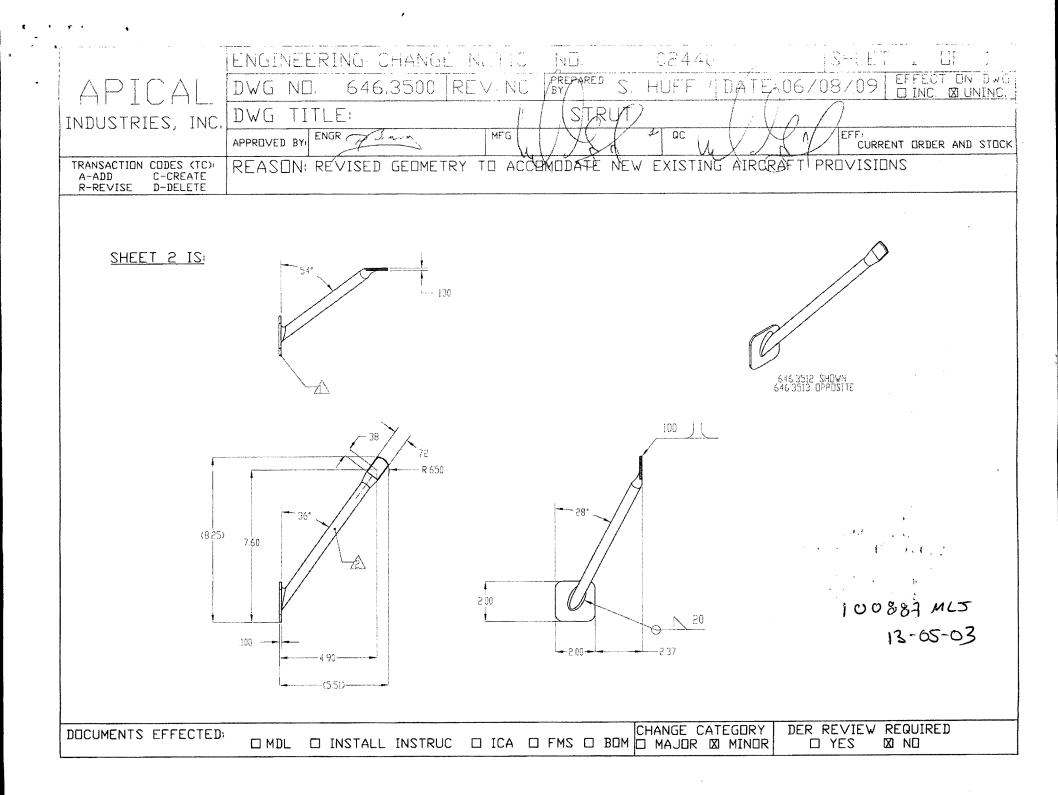
# FIRST ARTICLE INSPECTION CHECKLIST

Drawing	Tolerance	Actual	Accept	Reject	Method of Inspection	Comments
Dimension		Dimension				
2.00	+1-0.030	2.006	$\sqrt{}$		V	JKM-01
2.00	+1-0.030	2.603			V	
0.100	+1-0.010	0.103	$\sqrt{}$		<u> </u>	
	,					
:						
•						
			r.			

			OAS .				
Measured by:	MM	Audited by:	27		Preliminary Ap	proval:	
Date:	13.05.14	Date:	1391	9		Date:	

Rev	Date	Change	Revised by	Approved
E	10.04.14	Added preliminary approval	KJ	

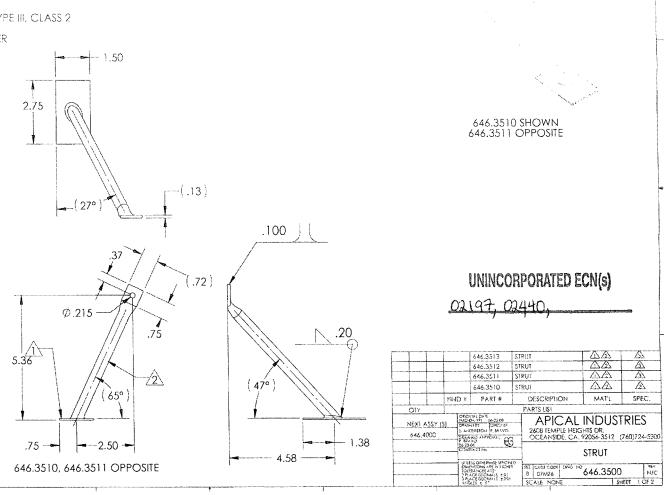
N 10.04.15

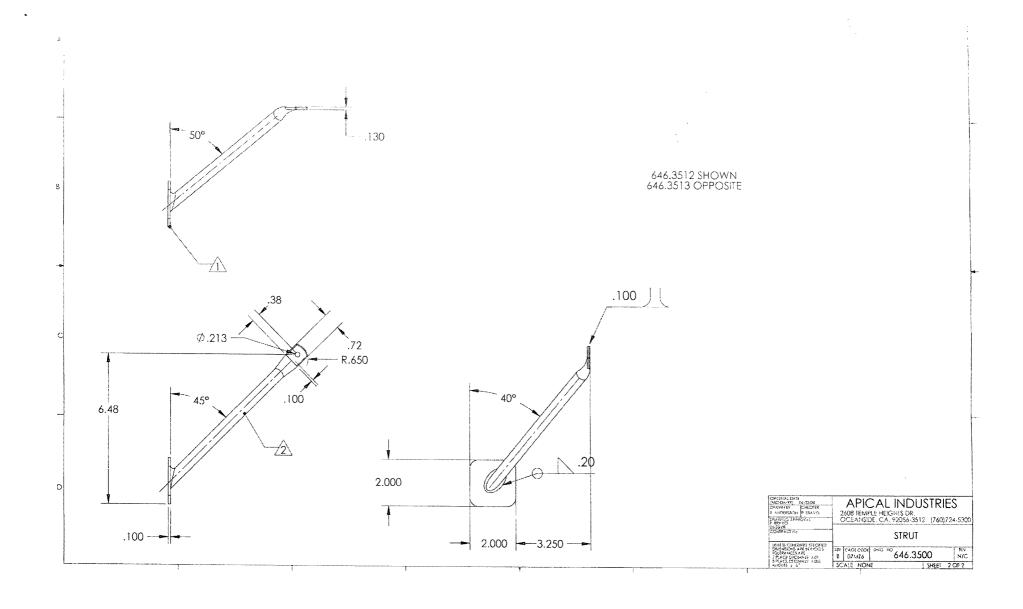


ENGINEERING CHANGE NETICE NO. 02197 SHEET 1 OF  APICAL DWG NO. 646.3500 REVIN/C BYPARED S. HUFF JAIE: 01/05/09 DINC. 101 NO. 1	
	UFF JAIE: 01/05/09   Inc. MUNING.
	()
The William III	NEXT URDER
TRANSACTION CODES (TC) REASON: REVISED ANGLE OF 646.3512 & 646.3513 FOR BETTER PITMENT R-REVISE D-DELETE	JR BETTER PITMENT
SHEET 2, IS:  SH	NGE CATEGORY   DER REVIEW REQUIRED

WITES.

- 15 MATERIAL: 6061-16 A: UMINUM IAW AMS-QQ-A-250/11; .062 THK.
- MATERIAL: 6061-T6 ALUMINUM IAW AMS-WW-T-700/6 .500" OD; .062" WALL THK
- FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2 COLOR BLACK;
  CARDINAL 4860-50 PRETREATMENT PRIMER PRIME IAW MIL-P-23377J TYPE I CLASS N
- 4. DEBURR AND BREAK ALL SHARP EDGES
- 5. WELDS IAW MIL-STD-2219. TIG WELD WITH FILLER ROD







## Engineering Change Request (ECR)

ECR# (Assigned by Engineering Dept.): D-13-033

Employee or Customer Name: Jean Luc Menard

Department or Company Name: DAS Production

Department or Company Phone/Fax/Email: jmenard@dartaero.com

Date: april 25<sup>th</sup> 2013

Subject Drawing/Document: 647.1800 (647.1813)

#### Problem:

Material is cracking, when bending,

We have started manufacturing the struts and have run into some problems with cracking when punching/bending the end of the struts.

Would going to 304 ss tubing with .049" wall be an acceptable deviation?

This would include changing the bottom plate that gets welded on also to SS.

Additional Comments/Clarification:

Engineering Liaison Representative (If applicable):

ECR Approval (Director of Engineering, Director of Operations, Manufacturing Manager or QC Manager):

ECN # (if applicable):

										DQA:	Date:	
NCR: Y	es / N	0			WORK ORDER NON	l-COI	NFORM	MANCE / UP	DATE	0.4.65		
										QA Closed:	Date:	
Work Orde	r:				DISPOSITION	DISPOSITION AGAINS			AGAINST DE	EPARTMENT,	/PROCESS	
					Rework	$\neg$		Skid-tube	Crosstube	1	Water Jet	Engineering
Part N	О.				Scrap		i	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
					Use-as-is		Therm	noforming	Finishing	Rec/Sto	re/Packaging	Other
NCR N	lo				Work Order Update			Large Fab	Composite		Supplier	
					4					_		
Root			1	Desc	ription of work order update	l l	Initial		tion	Sign &	_	
Cause	Dat	e Step	Qty		or Non-conformance	Ch	nief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data										,		
quip/Tooling	_											
Operator												
Material		:										
Setup Other												
Process												
Supplier							:					
raining												
Inapproved	_											
		L				FAUL	LT CATE	GORY		1	L	<b>.</b>
Landir	ng Gear				General							
	Bendi	ng			Bend		Grain			Ovalized		Pressure/Forced
	Centr	e Not Conc	entric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks Broken/Damaged				Inspecti	on incomplete	_	Part Incorre	ct	Weld	
,	_	ed/Crimpe	đ		Burrs		-	ions Incomplete/	/Unclear	Part Lost/M	issing	Wrong Stock Pulled
ļ	Cuffs			.	Contamination		Mainte			Part Moved		
	Heat			<u> </u>	Countersink	<u> </u>	Mislabe		<u> </u>	Positioned V		<b>7</b>
		ction Strip i	n Tube	 	Cut Too Short	<u> </u>	Misread	i		Power Loss/	Surge	Other
		es in Bend		-	Drill Holes	-	Offset					
	<b>-</b>	e Waves in		n  -	Drawing	<u> </u>	-	Calibration				
	HURNI	ag Seguenc	e		lFinish	Out of Sequence						

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Wave/Twist in Tube

#### Jean-Luc Menard

From:

Pablo Bravo

Sent:

April-24-13 2:23 PM

To:

Jean-Luc Menard

Cc:

David Duval; Linda Lacelle

Subject:

RE: 646.3510/3511/3512/3513 STRUT ASSY

:: .

Ims should be okay.

Papio

From: Jean-Luc Menard

Sent: Wednesday, April 24, 2013 9:15 AM

To: Pablo Bravo

Cc: David Duval; Linda Lacelle

Subject: Fwd: 646.3510/3511/3512/3513 STRUT ASSY

Any news on this?

Sent from my iPhone

Begin forwarded message:

From: Jean-Luc Menard < imenard@dartaero.com >

Date: 22 April, 2013 10:27:05 AM EDT
To: Pablo Bravo <a href="mailto:pbravo@dartaero.com">pbravo@dartaero.com</a>

Cc: David Duval < dduval@dartaero.com >, Linda Lacelle < llacelle@dartaero.com >

Subject: 646.3510/3511/3512/3513 STRUT ASSY

Hi Pablo,

We have started manufacturing the struts and have run into some problems with cracking when punching/bending the end of the struts.

Would going to 304 ss tubing with .049" wall be an acceptable deviation?
This would include changing the bottom plate that gets welded on also to SS.
Let me know asap so I can attach to the w/o and if acceptable I will issue a ECR.

THX

JL

ICD.	V	,	81-
NCR:	Yes	/	No

### **WORK ORDER NON-CONFORMANCE / UPDATE**

DQA:	 Date:	 ^

NCN.	es / NO				AAOUK OKDEK IAOIA-K	COIVI	OIN	NAIGE / OF	DAIL	QA Closed:	Dat	te:
Work Order:				DISPOSITION		AGAINST D			EPARTMENT/PROCESS			
Part No.			Rework Scrap	<b>-</b>		Crosstube Small Fab	Water Jet Prod. Eng. Coor.		Quality			
NCR No.			Use-as-is Work Order Update	<u> </u>	· ~— `		Finishing Composite	Rec/Store/Packaging Supplier		Other		
Root				Descri	ption of work order update	f work order update   Initial		Ac	tion	n Sign &		
Cause	Date	Step	Qty	(	or Non-conformance	Chie	f Eng	Desc	ription	Date	Verification	n QC Inspector
Doc/Data												
Equip/Tooling												
Operator		]										
Material		Ì				1						
Setup						İ						
Other												
Process												
Supplier					•							
Training				·								
Unapproved												
					F	AULT	CATE	GORY				
Landi	ng Gear				General					1	•	_
	Bending				Bend	Grain				Ovalized		Pressure/Forced
	Centre Not Concentric to O/S		BOM/Route	Шн	Hardware			Over/Under tolerance		Temperature/Cure		
	Cracks		Broken/Damaged	In	Inspection Incomplete			Part Incorrect		Weld		
	Crushed/Crimped		Burrs	lin	Instructions Incomplete/Unclear		'Unclear	Part Lost/M	Part Lost/Missing Wrong			
	Cuffs		Contamination		Maintenance			Part Moved				
	Heat Treat		Countersink	Mislabeled		eled		Positioned Wrong				
	Inspection Strip in Tube		Cut Too Short	$\square$	Misread			Power Loss/	Power Loss/Surge Other			
	Ripples in Bend Drill Holes		Drill Holes		Offset							
	Torque W	aves in E	Extrusio	n [	Drawing	По	ut of (	Calibration				
	Turning Sequence Finish		Finish	По	ut of 9	Sequence						
	Wave/Twist in Tube		Folio	$\Box_{\cap}$	Outside Dimensions							

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